Claims

1. A system (1) for determining the leakproofness of an object (2) having a first cavity (3), said system (1) comprising

a closed chamber (4) having a second cavity (5), which chamber (4) is arranged to envelope said object (2) within said second cavity (5),

evacuating means (6) being arranged to lower the pressure inside one of said first cavity (3) and second cavity (5) with respect to the ambient pressure,

supplying means (7) for supplying a tracer gas (8) into the one of said cavities (3, 5) rendered the higher pressure, and

detecting means (9) being sensitive to said tracer gas (8),

characterized in, that said system (1) further comprises introduction means (10) being arranged to introduce a transport gas other than said tracer gas (8) into the one of said cavities (3, 5) rendered the lower pressure, and said evacuating means (6) further being arranged to compress arriving gas to the ambient pressure of the chamber (4), and said detecting means (9) being arranged to communicate with the one of said cavities (3, 5) rendered the lower pressure via the evacuating means (6) and being arranged for operation at the ambient pressure of said chamber (4), and said tracer gas (8) being hydrogen.

2. A system (1) according to claim 1, **characterized in,** said introduction means (10) being arranged to introduce the transport gas into the one of said cavities (3, 5) rendered the lower pressure during at least one controlled time interval.

3. A system (1) according to claim 2, **characterized in,** said introduction means (10) being arranged to introduce the transport gas in a continuous flow into the one of said cavities (3, 5) rendered the lower pressure during the at least one controlled time interval.

4. A system (1) according to claim 2, **characterized in,** said introduction means (10) being arranged to introduce a controlled amount of the transport gas into the one of

said cavities (3, 5) rendered the lower pressure during a first part of the at least one controlled time interval.

5. A system (1) according to claim 4, **characterized in,** said introduction means (10) further being arranged to introduce a continuous flow of the transport gas into the one of said cavities (3, 5) rendered the lower pressure during a second part of the at least one controlled time interval.

6. A system (1) according to claim 4, **characterized in,** said evacuating means (6) further being arranged to evacuate tracer gas (8) from the one of said cavities (3; 5) rendered the lower pressure towards said detecting means (9) during an evacuation time interval.

7. A system (1) according to any of the preceding claims, **characterized in,** that the transport gas is air or nitrogen.

8. A system (1) according to any of the preceding claims, **characterized in,** that the system (1) further comprises a first valve (19) located in an inlet (21) of the one of said cavities (3, 5) rendered the lower pressure and a second valve (20) located in an outlet (22) of the one of said cavities (3, 5) rendered the lower pressure.

9. A system (1) according to any of the preceding claim, **characterized in,** that the system (1) further comprises a filter (24) in an inlet (23) of the introduction means (10).

10. A system (1) according to any of the preceding claims, **characterized in,** that said first cavity (3) is rendered the lower pressure.

11. A system (1) according to any of claims 1-9, **characterized in,** that said second cavity (5) is rendered the lower pressure.

12. A system (1) according to any of the preceding claims, **characterized in,** that said object (2) is an aluminium wheel or an aluminium-alloy wheel.

13. A method for determining the leakproofness of an object (2) having a first cavity (3), said method comprising the steps of:

enveloping said object (2) within a second cavity (5) of a closed chamber (4),

establishing by evacuating means (6) a lower pressure inside one of said first cavity (3) and second cavity (5) with respect to the ambient pressure,

supplying a tracer gas (8) by supplying means (7) into the one of said cavities (3, 5) rendered the higher pressure, and

detecting said tracer gas (8) in the one of said cavities (3, 5) rendered the lower pressure with detecting means (9) being sensitive to said tracer gas (8),

characterized in, that the step of detecting said tracer gas (8) is preceded by a step of introducing a transport gas other than said tracer gas (8) into the one of said cavities rendered the lower pressure by introduction means (10) for transporting any tracer gas (8) in the second cavity (5) towards the detecting means (9) via the evacuating means (6), a step of compressing gas arriving at the evacuating means (6) to the ambient pressure of the chamber (4) and a step of pumping compressed gas to the detecting means (9) by the evacuating means (6), that the step of detecting said tracer gas (8) comprises detecting at the ambient pressure of the chamber (4) and that the tracer gas is hydrogen.

14. A method according to claim 13, **characterized in,** that the step of introducing the transport gas into the one of said cavities (3, 5) rendered the lower pressure is performed during at least one controlled time interval.

15. A method according to claim 14, **characterized in,** that the step of introducing the transport gas into the one of said cavities (3, 5) rendered the lower pressure during the at least one controlled time interval further comprises introducing the transport gas in a continuous flow for transporting tracer gas in the one of said cavities (3, 5) rendered the lower pressure towards said detecting means (9).

16. A method according to claim 14, **characterized in,** that the step of introducing the transport gas into the one of said cavities (3, 5) rendered the lower pressure during the at least one controlled time interval further comprises introducing a controlled amount of transport gas during a first part of the at least one controlled time interval for compressing accumulated tracer gas (8) in the one of said cavities (3, 5) rendered the lower pressure in order to produce a short and concentrated pulse.

17. A method according to claim 16, **characterized in,** that that the step of introducing the transport gas into the one of said cavities (3, 5) rendered the lower pressure

during the at least one controlled time interval further comprises introducing the transport gas in a continuous flow during a second part of the at least one controlled time interval for transporting said pulse towards the detecting means (9).

18. A method according to claim 16, **characterized in,** that the method further comprises a step of evacuating transport gas by the evacuating means (6) from the one of said cavities (3, 5) rendered the lower pressure during at least one controlled evacuation time interval for transporting said pulse towards the detecting means (9).

19. A method according to any of the preceding claims, **characterized in,** that the step of introducing a transport gas other than said tracer gas (8) into the one of said cavities rendered the lower pressure is preceded by a step of accumulating tracer gas (8) in the one of said cavities (3, 5) rendered the lower pressure.

20. A method according to any of the preceding claims, **characterized in,** that the step of introducing a transport gas further comprises eliminating contaminants in the transport gas using a filter (24) before the introduction.

21. A method according to any of the preceding claims, **characterized in,** that the step of establishing a lower pressure inside one of said first and second cavities (3, 5) comprises establishing the lower pressure in the first cavity (3).

22. A method according to any of claims 12-20, **characterized in,** that the step of establishing a lower pressure inside one of said first and second cavities (3, 5) comprises establishing the lower pressure in the second cavity (5).